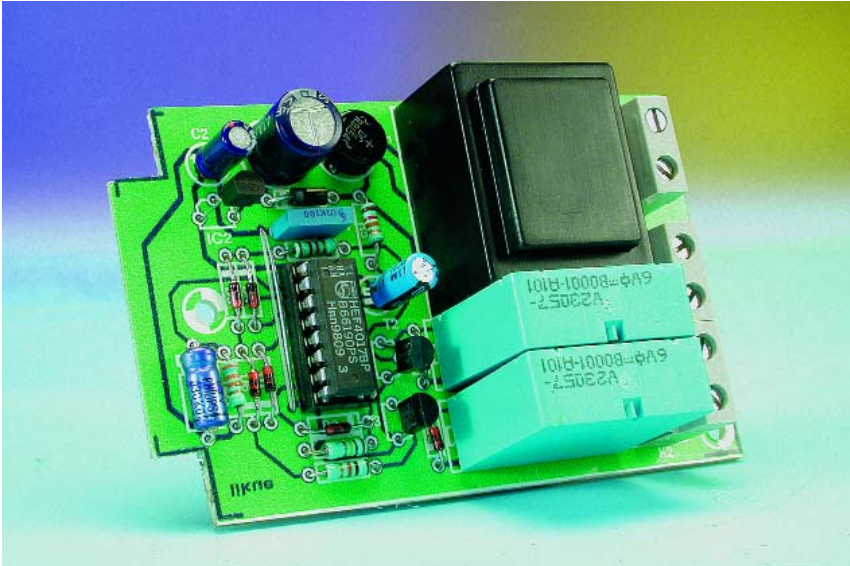


Multi-Position Mains Switch

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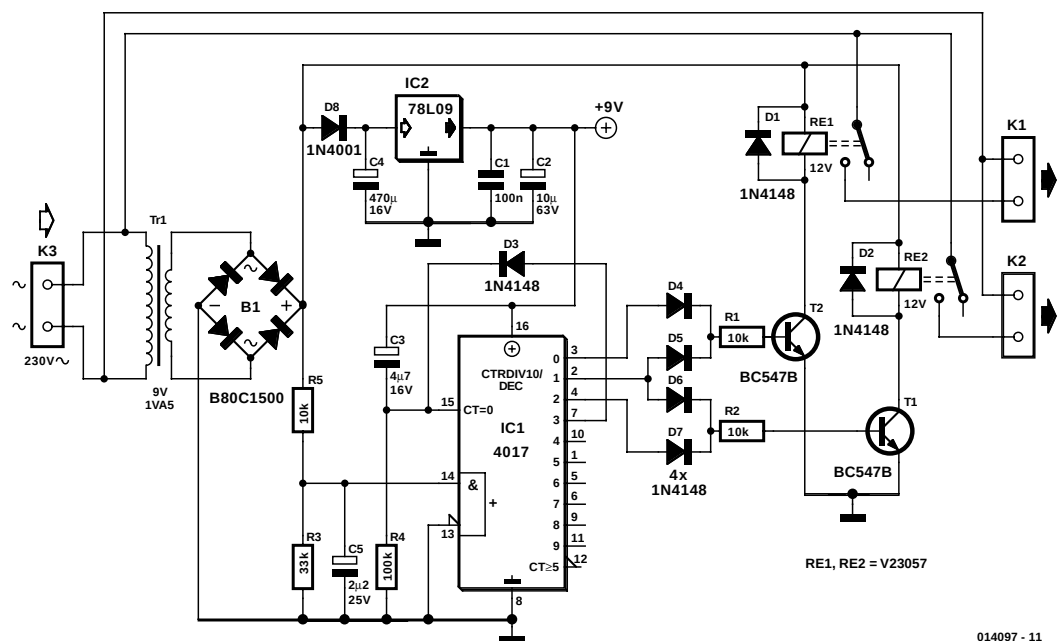


at the CLK input of IC1 the active output moves over by one position. In combination with the diode network D4 through D7 this ensures that with a single wall switch it becomes possible to control two outputs. When the mains voltage is applied to K3 for the first time, Q0 will be high and Re1 will be energised. When the mains switch is briefly switched off and then on again it will have no consequences for the 9-V power supply, because C4 is quite large. But this will result in a trigger pulse on the CLK input, so that Q1 will now be high and via D5 and D6 both relays are energised. After another off/on cycle of the mains switch, Q2 will be high, relay Re1 will de-energise and only Re2 is still activated. If we repeat the off/on cycle once more we're back at the starting position and only Re1 is

The circuit shown here was born out of necessity after one of our colleagues had just renovated his kitchen and realised afterwards that there were not enough switches. Obviously he was not too keen to partially demolish the kitchen to install a few additional wires in the already tiled wall. That's how the idea arose to develop a clever electronic circuit that would operate two lamps with only one switch.

All this appeared to be easy to realise by adding a small circuit, consisting of a decade counter, a diode network, two relays and a low voltage power supply. The schematic shows how simple the design of the 'multi-position' extension really is. K3 is connected to the switched wires that go to the original light. K1 and K2 are the connections for the two new lamps.

The operation is simply based on the fact that at every low to high transition



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COMPONENTS LIST

Resistors:

R1, R2 = 10kΩ
R3 = 33kΩ
R4 = 100kΩ
R5 = 10kΩ

Capacitors:

C1 = 100nF
C2 = 10μF 63V

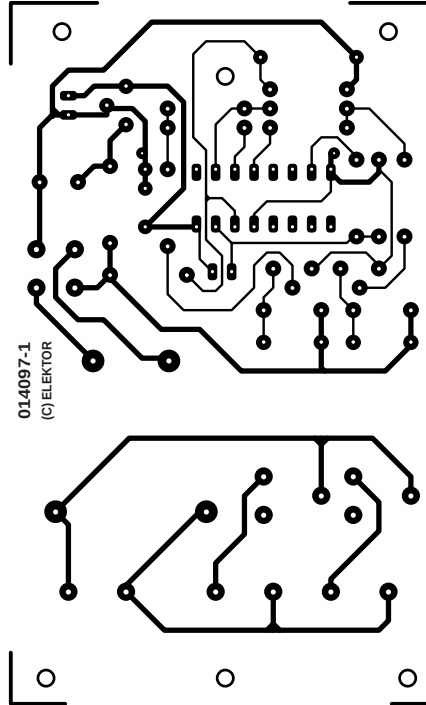
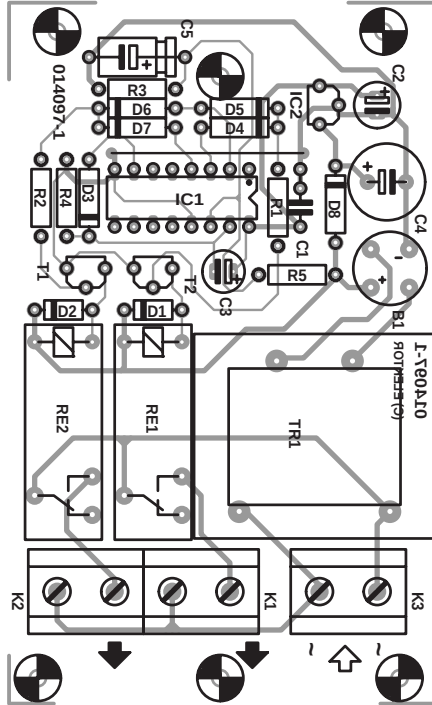
C3 = 4μF 7 63V radial
C4 = 470μF 16V radial
C5 = 2μF 2 63V axial

Semiconductors:

D1-D7 = 1N4148
D8 = 1N4001
T2, T3 = BC547B
IC1 = 4017
IC2 = 78L09

Miscellaneous:

K1, K2, K3 = 2-way PCB terminal block, lead pitch 7.5mm
Tr1 = mains transformer 9V 1.5VA, e.g., Hahn EI 3022021
B1 = B80C1500 (round case) (80V piv, 1.5A)
Re1, Re2 = 12V relay, e.g., V23057 B0002 A101 12V (Schrack)
Case, Bopla, OKW or Schyller



energised. If the switch remains in the 'off' position then both relays will also be off.

A printed circuit board has been designed for this extension so that the entire circuit will fit without any problems in a waterproof enclosure from OKW, Bopla or Schyller. The 9-V transformer is also fitted on the PCB. PCB screw terminals can be used for K1, K2 and K3. Since the circuit is directly connected to the mains voltage we emphasise that the well-known safety rules need to be observed. When making any measurements or performing other operations on the circuit it is absolutely necessary to first break the connection to K3! Unfortunately, the PCB shown here is not available ready-made.